

**CLAIMS**

1. A reactor for chemical processes involving catalytic reactions of gasses at high temperatures, comprising  
5 a gas impermeable basket suitable for operation at elevated temperatures surrounded by a layer of insulation material, the insulation material being surrounded by a reactor shell suitable for operation at elevated pressures,  
10 wherein the basket comprises an inlet channel and a wall surrounding a fixed catalyst bed, and  
wherein the inlet channel is connected to the reactor shell  
15 forming a gas leak tight transfer for a feed gas.
2. Reactor according to claim 1, wherein inner surface of the basket is coated with a ceramic material such as alumina or zirconia.  
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3. Reactor according to claim 1, wherein an electric heater is installed on the outer surface of the wall around the inlet layer of the catalyst bed.
- 25 4. Reactor according to claim 3, wherein inner surface of the basket at position of the heater is coated with a catalytic material active in partial oxidation.
- 30 5. Reactor according to claim 4, wherein the catalytic material comprises platinum, rhodium, ruthenium or nickel.

6. Reactor according to claim 1, wherein catalyst in the catalyst bed comprises particles or a monolith.

7. A method of using a reactor according to claim 1 for catalytic partial oxidation of hydrocarbons.

8. A method of using a reactor according to claim 1, wherein the temperature of the reacting gasses is in the range of 500°C to 1300°C.

9. A method of using a reactor as recited in claim 8, wherein the temperature of the reacting gasses is between 900°C and 1200°C.